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Reply to Office Action of January 6, 2004

REMARKS

Applicants respectfully request the Examiner to reconsider the present application in view of the foregoing amendments to the claims.

In the present application, claims 1, 3 and 5-14 are pending. Claims 15-16 have been added. No new matter has been added by way of new claims 15-16 because each new claim is supported by the present specification at, for instance, page 7, lines 20-24 and the Examples (starting at page 9, line 17).

Based upon the above considerations, entry of the present amendment is respectfully requested. In view of the following remarks, Applicants respectfully request that the Examiner withdraw the only rejection and allow the currently pending claims.

Issues Under 35 U.S.C. § 103(a)

Claims 1, 3 and 5-14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Buckmaster '409 (U.S. Patent No. 5,093,409) (the Office Action lists claims 1, 3-14). Applicants respectfully traverse, and reconsideration and withdrawal of this rejection are respectfully requested.

The Present Invention and Its Advantages

Some conventional tetrafluoroethylene (TFE)/hexafluoropropylene (HFP) copolymers have been proposed to coat electric wires and cables

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for certain characteristics, but unsatisfactory insulating performances and instability to heat have been the results (as described by Applicants in the present specification starting at page 1, line 13). Other copolymers have been attempted to account for these drawbacks (see the specification at page 2, starting at line 12), but other disadvantages occur, such as corrosion of the core wire or an adverse impact on the electrical characteristics themselves (see page 3, lines 13-21). In contrast, the present invention has achieved a fluorine-containing polymer that does not corrode the wire or impair the electrical characteristics of the wire or cable as do the conventional copolymers.

Specifically, the present invention is directed to a fluorine-containing polymer and an electric wire or cable coated with this polymer, wherein the polymer includes tetrafluoroethylene and hexafluoropropylene, and a total content of any alkali metal or alkali earth metal, which does not exceed the value of formula (1) and which exceeds the value of formula (2) as recited in claims 1 and 3, for example. Applicants also submit that the polymer chain terminals substantially comprise $\text{-CF}_2\text{H}$, and that the alkali/alkali earth metal content is controlled to be relatively low.

Other embodiments of the present invention include utilizing perfluoroalkyl vinyl ether (*i.e.*, see claim 1 or 6), having potassium and/or sodium in the alkali metal or alkali earth metal (*i.e.*, see claim

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11 or 12), and a different content (ppm) of the alkali metal and an alkali earth metal (i.e., see claim 13 or 14).

Even the unexpected advantages of the present invention have been experimentally confirmed. For instance, the polymer of the present invention exhibits an advantageously low dielectric dissipation factor as evidenced by a comparison between Examples 1 and 2 (present invention) and Comparative Examples 1 and 2 (containing higher amounts of potassium) as described at pages 9-11 of the specification (specifically, see page 10, lines 13 and 21 versus page 11, lines 1 and 6 for the described experimental results). Additionally, the polymer of the present invention exhibits advantageous resistance to discoloration as evidenced by the tests conducted in connection with Example 3 (present invention) and Comparative Example 4 (containing higher amounts of potassium) as described at pages 11-12 of the specification (see page 11, lines 19-20 versus page 12, lines 2-3). In contrast to the present invention, the cited Buckmaster '409 reference fails to disclose all features and advantages of the present invention.

Distinctions Over Buckmaster '409

Applicants respectfully submit that a *prima facie* case of obviousness has not been established with respect to the cited Buckmaster '409 reference. Further, unexpected results for the present invention rebut any asserted *prima facie* case of obviousness.

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The Office Action refers Applicants to various parts of Buckmaster '409, such as Col. 4, line 15 for asserted disclosure of persulfates. However, Applicants respectfully submit that, e.g., there is no still no disclosure of all features as instantly claimed. Although Buckmaster '409 discloses using an initiator at Col. 4, line 15, Applicants respectfully submit that Buckmaster '409 does not disclose the alkali metal or alkali earth metal as instantly claimed.

First, Applicants respectfully submit that an analysis under 35 U.S.C. §103(a) requires a determination of the scope and content of the prior art, *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966). In determining the scope and content of the prior art as required by *Graham v. John Deere Co.*, an evaluation of the claimed subject matter as a whole in the light of the differences between the pending claims of the present invention and the cited Buckmaster '409 reference reveals that Buckmaster '409 is limited in scope of its disclosure of the present invention.

Second, Applicants submit that one of ordinary skill in the art would understand that Buckmaster '409 does not disclose the features as instantly claimed. Specifically, there is no disclosure, and one having ordinary skill in the art would not recognize, using an alkali metal or alkali earth metal based on the disclosure in Buckmaster '409. Though the Office Action refers Applicants to Col. 4, line 15, a reading of the entire disclosure of Buckmaster '409 reveals that the claimed features

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of the present invention are not disclosed nor rendered obvious by this reference. For instance, Buckmaster '409 at Col. 1, lines 45-57 (the "Background" section) describes its achievements of unexpected results by utilizing secondary or tertiary amines, whereby the unexpected results are in relation to the method of the '083 patent (Schreyer, U.S. Patent No. 3,085,083). The '083 patent method stabilizes the end groups by adding an alkaline metal, wherein this reference describes that the formation of $-CH_2H$ groups is increased by the addition of alkali metal (see Col. 2, line 60 to Col. 3, line 47 of the '083 patent). Thus, Buckmaster '409 actually teaches away one having ordinary skill in the art from even using an alkali metal, such as the technology described in the '083 patent, since using the Buckmaster '409 secondary or tertiary amines achieves unexpected results over such a method using alkali metal (see Col. 1, 54-57).

Further, the skilled artisan would recognize the other teaching away present in Buckmaster '409. Specifically, none of the Examples of Buckmaster '409 (at Cols. 11-18) use an alkaline metal or alkaline earth metal.

Accordingly, based on the disclosure in the "Background" section and the actual Examples, Buckmaster '409 does not recognize the importance of using alkali metal or alkali earth metal as instantly claimed. Even though the Office Action refers to Col. 4, line 15 of Buckmaster '409, one having ordinary skill in the art would understand

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(based on the entire disclosure) that Buckmaster '409 does not describe or suggest that a specified amount of alkali metal or alkali earth metal can be used as recited in the present invention, and the reference even discloses the "unexpected results" of its method over such a method employing the mentioned metals.

Thus, Applicants respectfully submit that Buckmaster '409 fails to disclose the amount of alkali metal or alkali earth metal as instantly claimed (*i.e.*, see the features of pending claim 1). Further, the disclosure in Buckmaster '409 does not equal disclosure of the amount of alkali metal or alkali earth metal as instantly recited. Thus, Applicants respectfully submit that this rejection has been overcome.

Applicants also submit that the requisite motivation and reasonable expectation of success are lacking. For instance, one having ordinary skill in the art would not reasonably expect to be successful, upon a reading of the entire disclosure of Buckmaster '409, to achieve the present invention when Buckmaster '409 discloses that its methods are unexpectedly better than older technology using an alkali metal (at Col. 1, lines 54-57). There are even no examples in Buckmaster '409 to use such metals. Thus, Applicants respectfully submit that the instant rejection has been overcome since these other requirements for a *prima facie* case of obviousness have not been satisfied as well.

Accordingly, Applicants respectfully submit that this rejection has been overcome. U.S. case law squarely holds that a proper obviousness

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inquiry requires consideration of three factors, including how the prior art reference (or references when combined) must teach or suggest all the claim limitations. See *In re Vaeck*, 947 F.2d, 488, 493, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991). Here, the cited Buckmaster '409 reference fails to disclose the alkali metal or alkali earth metal as instantly claimed. Applicants also submit that the requisite motivation and reasonable expectation of success are also lacking, which are the other requirements for a *prima facie* case of obviousness.

Applicants also traverse the conclusion regarding the melt flow rate as instantly claimed is a matter of optimum or working ranges by routine experimentation (see the Office Action at the bottom of page 2). No scientific evidence has been provided for such a conclusion that the instantly claimed feature of "wherein a melt flow rate (MFR) (g/10 min., ASTM D2116) at 372°C is within a range from 0.1 to 100" is an optimal range or involves routine experimentation. Applicants instead are entitled to a presumption of patentability, and the cited Buckmaster '409 reference is also deficient in disclosing this claimed feature. If the Examiner continues to maintain that the claimed MFR is a optimal range or involves routine experimentation, Applicants hereby challenge this assertion. This challenge is based upon the reasoning above. Thus, to maintain that this claimed feature involves "optimum or workable ranges by routine experimentation", Applicants request that the Examiner produce evidence to support this assertion. Alternatively, if the Examiner is

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relying upon personal knowledge to support the finding of what is known in the art, the Examiner is respectfully requested to provide an affidavit or declaration setting forth specific factual statements and explanations to support such an assertion. In this regard the Examiner is referred to 37 C.F.R. §1.104(d)(2). Thus, Applicants respectfully submit that the cited Buckmaster '409 reference fails to disclose this additional claimed feature regarding the MFR of the present invention.

Unexpected Results Rebut Any Asserted *Prima Facie* Case of Obviousness

Applicants respectfully submit that the present invention has achieved unexpected results, wherein these unexpected advantages rebut any asserted *prima facie* case of obviousness. As mentioned above, the present invention has achieved better dielectric dissipation factors over the comparative examples (see the specification starting at page 9) with little or no discoloration. Overall, the present invention has achieved a fluorine-containing polymer that does not corrode the wire or impair the electrical characteristics of the wire or cable as do the conventional copolymers. Thus, Applicants respectfully request consideration of these unexpected results, which rebut any asserted *prima facie* case of obviousness (even in view of Buckmaster '409). Reconsideration and withdrawal of the rejection under § 103(a) are respectfully requested.

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Conclusion

Accordingly, Applicants respectfully submit that a *prima facie* case of obviousness has not been established with regard to the cited Buckmaster '409 reference and that this rejection has been overcome. Also, unexpected results for the present invention rebut any asserted *prima facie* case of obviousness.

A full and complete response has been made to all issues as cited in the Office Action. Applicants have taken substantial steps in efforts to advance prosecution of the present application. Thus, Applicants respectfully request that a timely Notice of Allowance issue for the present case.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Eugene T. Perez (Reg. No. 48,501) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

Pursuant to 37 C.F.R. § 1.17 and 1.136(a), Applicants respectfully petition for a two (2) month extension of time for filing a response in connection with the present application. The required fee of \$420.00 is attached hereto.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees

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required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.


Respectfully submitted,


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